San Francisco Bay Conservation and Development Commission
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April 10, 2015

TO: Commissioners and Alternates

FROM: Lawrence J. Goldzband, Executive Director (415/352-3653; larry.goldzband@bcdc.ca.gov)
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SUBJECT: Staff Recommendation for BCDC Permit Application No. 2013.003.00(md); Lind Marine Incorporated's Application for Sand Mining at Middle Ground Island
(For Commission consideration on April 16, 2015)

Recommendation Summary

The staff recommends approval of BCDC Permit Application No. 2013.003.00 (md), for Lind Marine Incorporated for sand mining in Suisun Bay, which, as conditioned, will authorize the following activities:

> Mining up to 100,000 cubic yards (cy) of construction grade sand annually for ten years from 367 acres of subtidal sand shoals adjacent to Middle Ground Island using a hydraulic drag arm dredge. Mining will not exceed 1.0 million cy of sand (Exhibit A and B) over ten years. In addition, the project would include "peak year" mining volumes up to 120,000 cy in any given year as long as the total does not exceed 1.0 million cy over the ten-year permit period. Sand would be offloaded and sold at various upland facilities in Napa, Petaluma, and Collinsville.

Staff Recommendation

The staff recommends that the Commission adopt the following resolution.

I. Authorization

A. **Authorized Project**. Subject to the conditions stated below, the permittee, Lind Marine Incorporated, is granted permission to do the following:

Location: In the Bay and within the primary management area of the Suisun Marsh, on tideland parcel TLS 39, within the privately owned submerged lands (367-acre Middle Ground Lease) in the Middle Ground Island sand shoals near Middle Ground Island (MGI) in western Suisun Bay, Suisun Channel within Contra Costa County (Exhibits A and B).

Description: In the Bay

1. Mine up to 100,000 cy of construction grade sand annually over a ten-year period from submerged lands located near MGI in the Suisun Channel using a hydraulic stationary pothole dredge.
2. "Peak year" mining volumes up to 120,000 cy in any given year are authorized, provided that a rolling average of no more than 100,000 cy is maintained, and the total volume does not exceed 1,000,000 cy over the ten-year authorization period;

Within the 100-Foot Shoreline Band

1. Place the mined sand at any authorized sand yards, authorized projects within the Commission's jurisdiction, or other upland location outside of the Commission's jurisdiction.

B. **Application Date.** This authorization is generally pursuant to and limited by the application dated February 20, 2013, and revised application dated April 3, 2015 including all accompanying and subsequently submitted correspondence and exhibits, subject to the modifications required by conditions herein.

C. **Deadlines for Commencing and Completing Authorized Work**. Work authorized under the project must commence prior to December 1, 2015, or this permit will lapse and become null and void. All authorized work must be diligently pursued to completion and must be completed within ten years of commencement or by April 26, 2025, whichever is earlier, unless an extension of time is granted by amendment of the permit. Changes in the authorized work, including volumes, mining methods, or seasonal restrictions may require amendments to the authorization.

D. **Project Summary.** After completion, the project will result in the extraction of up to 1.0 million cubic yards of sand from subtidal areas of the 367-acre Middle Ground Island Grossi lease (Exhibit B) over ten years and the sale of this material to Bay Area customers, mainly for use in construction projects within the region.

II. Special Conditions

The authorization made herein shall be subject to the following special conditions, in addition to the standard conditions in Part IV:

A. **Sand Mining Operations.** To minimize impacts to fish, pelagic organisms, and benthic biota, all sand mining authorized herein shall be performed using the "stationary pothole" mining method, involving a tugboat and a hopper barge with a maximum capacity of 1,850 cy, equipped with 5,000 gallon per minute (gpm) suction dredge, with a six-inch grizzly screen attached to the end of the suction pipe dredge head. All external vent pipes or intake pipes shall be outfitted with positive barrier fish screen, with opening no greater than 1.75 mm. In the event that new equipment is used, the permittee shall provide

Commission staff and the Resource Agencies, including the US Fish and Wildlife Service (USFWS), NOAA National Marine Fisheries Service (NMFS), the California Department of Fish and Wildlife (CDFW), and the San Francisco Bay Regional Water Quality Control Board (Water Board), with a description of the new equipment and pump capacity for re-evaluation of potential entrainment and impingement effects.

B. **Permit Duration.** The work authorized herein shall be completed by April 26, 2025, after which time this permit will become null and void unless the authorization for sand mining is extended or increased through an amendment to this permit.

C. **Monitoring Mineral Resource Impacts.** The permittee shall monitor changes to Bay bathymetry and mining activity as follows:

1. By November 30, 2015, the permittee shall install, use and maintain an automatic Global Positioning System (GPS) tracking system upon all barges used during mining operations under this permit. Once the GPS system is installed, the permittee shall submit documentation to Commission staff verifying the installation. The permittee shall provide "mining tracklines" to Commission staff on a quarterly basis as described in Special Condition II-G(1).

2. The permittee shall monitor the changes to Bay bathymetry through bathymetric change analysis, utilizing multibeam surveys of the lease area and an adjoining control area. Two multibeam surveys of the lease areas shall be completed. The first shall be done between January 1 and June 1, 2018, and the second between January 1 and June 1, 2023. The bathymetric change analysis shall be conducted by completing additional multibeam surveys of the lease area and control area using the same methodology as the original multibeam survey conducted in February 2014.
3. By October 1, 2018 and October 1, 2023, the permittee shall provide to Commission staff a written report and analysis including: (a) the survey of the lease area, (b) an analysis of the changes in bathymetry, areas of depletion, accretion or other trends; (c) a discussion of the findings, and (d) a quality control analysis completed by an independent third party.

D. **Protection of Fish and Wildlife and Associated Habitat.**The permittee shall implement the following measures as specified in the final biological opinions from USFWS and NMFS, the incitendal take permit (ITP) from CDFW, and the conditions herein to reduce the potential impacts to fish, other aquatic organisms and wildlife and to mitigate for "take" of listed species.

1. **Minimization Measures**

   a. **Mining Limitations**. In order to protect the various life stages of longfin smelt, Delta smelt and their habitat in Suisun Bay, particularly during the spawning period, the permittee shall adhere to the following practices and seasonal limitations.

Buffer Zones	**No mining:** Within 200 feet of any shoreline. Within 250 feet of depths less than minus 9 feet mean lower low water (MLLW).
Minimum Depth	**No mining:** In depths less than minus 25 feet MLLW, December – June. In depths less than minus 15 feet MLLW, July – November.
Seasonal Volume Limits	**Mine up to:** 51,000 cy during December – June (with monthly maximums as specified in the USFWS biological opinion dated October 22, 2014).

   b. **Fish Screens on Intake Vents**. At all times during sand mining operations, the permittee shall maintain and operate the fish screens installed on the external vent pipes consistent with CDFW, NMFS and USFWS criteria to exclude juvenile and adult fish from entrainment during mining events. The permittee shall visually inspect the fish screen following each mining event to verify screen integrity, remove any impinged debris and record any fish impinged on the screen and report any impinged listed species to the Resource Agencies and BCDC, as described below Special Condition II-D(2)(b) and (c). If the fish screen is damaged, sand mining shall cease until the screen is either repaired or replaced.

   c. **Pump Priming and Clearing Depth**. Priming and clearing the suction pipe and the pump shall only occur when the suction head is as close to the Bay floor as possible and no more than three feet above the substrate.

   d. **Water Volume Limitation**. Pursuant to the amended CDFW ITP dated October 20, 2014 and the conditions herein, the total annual water diversion from sand mining shall be restricted to 16 acre-feet (af). The permittee shall keep a log of water diversion pursuant to the requirements of the amended CDFW ITP. Sand mining shall cease for the year once the total annual water diversion limit of 16 af is reached.

2. **Monitoring Biological Impacts**

   a. **Designated Biologist**. Pursuant to the amended CDFW ITP and the conditions herein, the permittee shall designate a biologist to educate sand mining personnel on the potential impacts of sand mining on the Bay's natural resources and how those impacts can be avoided, and to conduct monthly monitoring of the covered activities, which will assist in minimizing or avoiding the incidental take of covered species and the disturbance of their habitat. Pursuant to the USFWS biological opinion, the permittee shall ensure that its sand mining personnel, including contractors, receive training on recognizing Delta smelt during regular observation of operations and equipment. The training will include awareness of environmentally sensitive areas to avoid and areas that require special precautions to limit impacts to Delta and longfin smelt.

   b. **Compliance Monitoring**. The designated biologist shall conduct monthly compliance inspections to assist in minimizing and avoiding the "take" of listed species and to confirm that only authorized activities are taking place. The designated biologist or permittee's representative shall prepare a written summary of these compliance inspections and provide them as part of the annual reports according to Special Condition II-G(2).

   c. **Notification of Take or Injury.** The permittee shall notify CDFW, NMFS (as appropriate), USFWS, and Commission staff immediately if a covered species is taken or injured due to a sand mining activity or found dead or injured in the vicinity of sand mining activity. A written report of the incident shall be submitted within 5 days to CDFW, USFWS, NMFS and Commission staff.

3. **Mitigation for Biological Impacts.** The permittee shall provide the following mitigation for impacts of the mining activity:

   a. **Take of Listed Species.** To compensate for take of listed species (longfin smelt, Delta smelt and salmonids), from Lind Marine's activities within Middle Ground Island lease area and Suisun Associates lease area (BCDC permit application No. 2013.005.00(md)), and pursuant to CDFW and NMFS requirements, the permittee has purchased 0.107 acres of freshwater habitat mitigation credits at Liberty Island Conservation Bank in Yolo County.

   b. **Essential Fish Habitat**. To compensate for impacts to Essential Fish Habitat (EFH), for all sand mining activities within Suisun Associates and Middle Ground Island lease areas, the permittee shall contribute $16,500.00, in the form of funds and/or services, by December 31, 2016 to CalRecycle's Estuary Clean Up Project within San Francisco Bay.

E. **Water Quality.** The permittee shall:

1. Maintain, in good standing, a Water Quality Certification and Waste Discharge Requirements (WQC/WDR) for the life of this permit, and operate mining activity in accordance with those requirements. In the event that the WQC/WDR is suspended or revoked during the authorization period of this permit, the permit shall be suspended until such time that the WQC/WCR is reinstated or the authorization expires.
2. Undertake the Self Monitoring and Reporting Program as described and required in the WQC/WDR and submit a copy of the self monitoring reports to Commission staff within 30 days of their completion and submission to the Water Board. Commission staff will provide any comments within 45 days of receipt of these reports.
3. Cease mining operations immediately whenever violations of WQC/WDR requirements are detected through the Self Monitoring Program described in the WQC/WDR requirements. The permittee shall notify the Water Board and BCDC staff immediately by telephone and email whenever violations are detected. Operations shall not resume until alternative methods of compliance are provided and a corrective action plan is agreed to by the Water Board and Commission staff.

F. **Studies to Improve Scientific Understanding of Sand Mining Impacts.** In order to increase the understanding of the physical and biological systems in which sand mining occurs, and the potential impacts of sand mining on these systems, the permittee shall participate as needed in the following scientific studies.

1. **Sand Budget, Transport and Mining Effects.** The permittee shall contribute up to $84,151 towards scientific studies to increase the understanding of the following: (a) the San Francisco Bay sand budget; (b) sand transport into the Bay from the Delta and local tributaries, and from the Bay to the outer coast (San Francisco Bar and Ocean Beach); (c) the amount and type of sand found at specific locations; and/or (d) the impacts of mining on the sand resource. This funding will be combined with funding from Suisun Associates and Hanson Marine Operations to provide $1.2 million for creation of a Sand Studies Technical Advisory Committee (SSTAC), an Independent Science Panel (ISP), and implementation of the studies to address the above-described issues and potential impacts of sand mining on the sediment system.
    a. **Funding Schedule**. Pursuant to the schedule below, the permittee shall deposit $84,151 for the sand transport and budget studies described above, into the Coastal Trust Fund held by the California State Coastal Conservancy. The funds (plus any accrued interest) shall be dispersed for the purpose of conducting the scientific studies outlined above.

        Funding Schedule:

        (1) $21,037 by December 31, 2015

        (2) $21,038 by December 31, 2016

(3) $21,038 by December 31, 2017

(4) $21,038 by December 31, 2018

If the deposits have not been made as scheduled above, this permit will be suspended until the deposit has been made.

b. **Sand Studies Technical Advisory Committee and Independent Science Panel**. In order to accomplish the above-described studies, the Commission's Executive Director in consultation with the permittee and others, shall appoint a Sand Studies Technical Advisory Committee (SSTAC) and an Independent Science Panel (ISP) to guide the studies to completion. The SSTAC shall consist of the permittee's representative, regulatory and resource agency representatives as appropriate, and an independent study coordinator. The SSTAC, in consultation with the ISP, will identify the management questions that will be addressed by the studies and monitor study progress and results. The ISP will consist of independent scientists with expertise in the studies being considered and will be supported by the study coordinator. The ISP will recommend the type and scope of studies needed to address the management questions, as well as review: (1) the study design and plans for their ability to address the management questions; and (2) study results, conclusions, and recommendations. The study coordinator will finalize the study plans collaboratively with the ISP and work with the California Coastal Conservancy to contract for and manage the studies.

2. **Benthic Ecology and Mining Effects.** The permittee shall contribute up to $19,250.00 towards scientific studies to increase the understanding of San Francisco Bay benthic ecology and effects of sand mining on that ecology, pursuant to the NMFS' biological opinion, dated January 26, 2015 and the conditions herein, for the authorized project. The benthic study shall be conducted in the following manner:

   a. A Benthic Ecology Technical Advisory Committee (BETAC) shall be developed, including a permittee representative, members of the regulatory and resource agencies, as appropriate, and representatives from the scientific community with expertise applicable to assessing benthic communities, and impacts associated with multiple disturbance events. The BETAC will develop the study purpose and management questions to be evaluated. The BETAC will determine if it is necessary to include Suisun Bay in the scope of the benthic ecology and mining effects study.

   b. In collaboration with the permittee, the BETAC shall develop a project statement of work by October 31, 2015 and submit that statement of work to Commission, Water Board and NMFS staff by for review and approval. The statement of work shall include management questions to be studied, study objectives, general requirements, contract management, contractor qualifications, deliverables, schedule and evaluation factors of the study.

c. Once approved, the statement of work will be distributed widely to the scientific community as a request for proposal (RFP), for a minimum of one month and a maximum of four months.

d. The proposals will be reviewed and selected by the BETAC based on evaluation factors described in the statement of work, and a qualified researcher(s)/contractor(s) will be selected within six months of completing the statement of work.

e. The selected researcher(s)/contractor(s) shall provide quarterly updates to the BETAC, until the study is complete.

f. A draft report shall be provided to the BETAC within three months of study completion for review and comment.

g. The final report must be submitted by March 31, 2018 for review and consideration by the BETAC, Commission, Water Board and NMFS staff.

3. **Water Effluent and Mining Effects**. The permittee shall conduct an effluent study in accordance with and as described in the Water Board's WQC/WDR dated January 21, 2015. The effluent study shall characterize overflow toxicity, suspended sediment levels, conventional and toxic pollutant concentrations, the spatial and temporal extent and magnitude of the overflow plume at depth and at the surface in comparison to existing conditions. In addition, the study shall be representative of the permittee's mining areas, as well as tidal and seasonal variations. Within 60 days of the completion of data collection, but no later than June 30, 2017, the permittee shall submit to Commission staff the results of the Water Board approved Sampling and Analysis Plan for review and consideration concurrently with submission to the Water Board. The Commission staff shall review the report and provide comments on the document within 60 days of receipt.

4. **Study Reports and Review**. In October 2016, the permittee shall provide a written report to the Commission on the status of the mining activity, of the mining effluent study, and the progress of the SSTAC and study work plans. In October 2018, the permittee, shall provide a report to the Commission on the change analysis of the 2018 multibeam survey, the benthic study, and status of the sediment studies. The permittee shall work with the Commission staff to determine whether and when additional updates are needed as well as any adjustments to the study timelines and associated due dates described below.

   The permittee shall provide the above-described studies to the Commission staff, the Water Board, the USFWS, NMFS, CDFW and the USACE for review and approval no later than the following :

a. **Bathymetric Surveys and Change Analysis**. The first survey and report shall be provided no later than October 1, 2018. The second survey and report shall be provided no later than October 1, 2023.

b. **Sand Budget and Transport Studies**. No later than October 1, 2020 or by such later date as established by the SSTAC, the permittee, in coordination with the SSTAC and the ISP, shall provide reports after the completion of each sand study, and a final summary report of the findings of all sand studies, including recommendations for further consideration

c. **Benthic Ecology Study**. The findings from the study shall be provided in report form, with recommendations for further consideration not later than March 31, 2018.

d. **Water Effluent Study**. The permittee shall submit, to Commission staff, the results of the Water Board approved Sampling and Analysis Plan to characterize effluent and receiving water quality concurrently with submission to the Water Board. A final study report shall be submitted within 60 days of data collection completion or no later than June 30, 2017, whichever occurs first. Commission staff will review the final report within 45 days for consistency with the authorized project and for additional impacts not evaluated as part of the authorized project. If additional significant impacts are identified by Water Board staff or Commission staff, amendment of the authorized project may be required.

G. **Mining Activity Reporting.** For the duration of the authorization, the permittee shall provide to the Commission the following written reports according to the described schedule regarding mining. The report shall be written on company letterhead and include the name of the permittee, the date of the report, the permit number and the signature of an authorized representative verifying the accuracy of the report.

1. **Quarterly Reports**. Beginning on July 31st 2015, and within 30 days of the end of each quarter thereafter (March 31st, June 30th, September 30th and December 31st) of each year until 2025, the permittee will provide the following in writing to BCDC:

   a. The start and end dates of the reporting period;

   b. The quantity of sand mined during the preceding quarter in cubic yards per month, the total volume for the quarter and the cumulative total for the permit year;

   c. The number of mining episodes that took place during the preceding quarter;

   d. The name and registration number of each dredge used during the preceding quarter;

e. The location(s) where the sand was deposited for resale during the preceding quarter, including the company name(s) and sand yard address(es);

f. The approximate amount (in cubic yards) of usable remaining sand in cubic yards and the total remaining sand for the mineable lease area down to minus 90 feet MLLW and how this volume was calculated;

g. Any collisions, near collisions or other navigation problems or conflicts encountered during the quarter's sand mining operations, including any conflicts in use of an area with recreational or commercial fishing vessels; and

h. The mining locations, including track lines with the start and end point of each mining event that took place during the proceeding quarter mapped on the most current available NOAA chart, including a scale and a north arrow, with the boundaries of the lease overlaid on the chart. The tracking data, including latitude and longitude of the mining event will be provided in csv (electronic spreadsheet) format. The track lines shall differentiate between the traveling or maneuvering periods of a mining episode and the actual sand mining periods. The mining episode recording equipment must meet the minimum reporting accuracy of ten feet during all loading and transportation operations, and shall record position at a maximum time interval of 10-seconds while within 2,000 feet of the lease area, and at one minute intervals otherwise. These plots and the raw data from the automated system shall also be made available for electronic download through the internet and by compact disc. If the information is provided via the internet by the required report date, the compact disc copy can be provided in a timely manner after the required reporting date.

2. **Annual Report**. By April 30th of each year, the permittee shall submit a summary report of the activities of the previous calendar year. The annual report shall:

   a. Summarize the above quarterly report information and discuss any anomalies, trends, or other additional findings;

   b. Provide a written summary of compliance inspections;

   c. Discuss the current status of the implementation of each mitigation measure;

   d. Assess the effectiveness of each minimization and mitigation measure in reducing impacts;

   e. Calculate and report the total annual water diversion from sand mining activities per CDFW specifications;

   f. Calculate and report the annual rolling average to date for the permittee's mining operations at the Middle Ground Island lease area;

   g. Describe take of any listed species, including type and number; and

   h. Provide an update on the status of the studies required in Special Condition II-G and any interim findings. Updates shall be provided until such time as the studies are completed.

3. **Report acceptance**. When the above listed reporting requirements are also required by the U.S. Army Corps of Engineers, NMFS, USFWS, CDFW and the Water Board, the Commission staff will accept the reports written for the other agencies provided that all of the information required by this authorization is included in the submitted report(s). If all the required information is not provided in the above reports to the other agencies, a supplement can be provided to the Commission with the additional information required by this permit.

H. **Modification or Revocation of Permit**. This authorization may be modified, suspended or revoked if, at any time during its effective life, it is determined by or on behalf of the Commission as described in 14 CCR Section 10261, through the monitoring reports, study of sand mining and its effects on physical or biological resources, or new information, that the authorized activities are resulting in: (1) substantial depletion of sand such that the sandy deep water habitat is not being conserved; and/or (2) significant adverse impacts to Bay resources that cannot be avoided or mitigated without amendment of this authorization. This authorization shall not be revoked if the permittee requests and agrees to an amendment of this authorization to include measures that the Commission or the Executive Director finds will avoid or fully mitigate for the significant adverse impacts caused by this activity.

I. **Observe and Inspect Operations.** Observers, researchers, Resource Agency staff, and Commission staff shall be allowed to come aboard the dredge to observe the sand mining operations and to gather information on any effects hydraulic sand mining may have on mineral or aquatic resources. In addition, the representatives from the Regulatory and Resource Agencies shall be allowed to inspect the captain's logs for each mining episode, equipment, yards and practices.

J. **Vessel Traffic Safety, Oil Spills and Hazardous Materials.** Sand mining operations shall comply with the Operating Procedures for the Vessel Traffic Safety System of San Francisco Bay, monitored by the U.S. Coast Guard, to avoid any hazard to commercial or military navigation and to prevent potential oil or other hazardous materials from entering the Bay. In addition, the permittee shall:

1. Inspect on a daily basis and maintain equipment operated within the Bay or channels to prevent leaks of contaminants or hazardous materials into the Bay.

2. If required by the Office of Oil Spill Prevention and Response (OPSR), maintain and implement a plan, reviewed and approved by OSPR, demonstrating that adequate measures are in place to prevent and respond to accidental releases of hydraulic fluids, solvents, oils, and other hazardous materials, and provide a copy of the approved plan to Commission staff.

3. Notify the Commission staff immediately by telephone and e-mail whenever a release of petroleum products or toxic chemicals to waters of the State occurs as a result of sand mining activity. The notification should identify the nature of the spill,

describe the action necessary to remedy the condition, and specify a timetable, subject to the modifications of the Water Board and the Commission, for remedial actions.

4. Immediately stop and, pursuant to pertinent state and federal statutes and regulations, arrange for repair and clean up by qualified individuals of any fuel or hazardous waste leaks or spills at the time of occurrence, or as soon as safety allows.

K. **Property Interest.** The current Grossi Family lease for tideland parcel TLS 39 is valid until September 1, 2017. Written documentation of the lease renewal shall be submitted to the Commission's office within 30 days of the issuance of its renewal (October 1, 2017). In the event that the permittee fails to obtain a new lease prior to the expiration of the existing lease, and/or holdover status is not established, the permit shall become null and void and all authorized mining activity shall cease.

L. **Surface Mining Reclamation Act (SMARA).** The Department of Conservation has approved the mining reclamation plan for this site and has a copy of it on file. The approved Reclamation Plan is incorporated herein by reference, and all the conditions will become conditions of this amended permit.

M. **Hold Harmless and Indemnify**. The permittee shall hold harmless and indemnify the Commission, all Commission members, Commission employees, and agents of the Commission from any and all claims, demands, losses, lawsuits, and judgments accruing or resulting to any person, firm, corporation, governmental entity, or other entity who alleges injuries or damages caused by work performed in accordance with the terms and conditions of this permit. This condition shall also apply to any damage to property that is alleged to be caused as a result of some action or lack of action by the Commission developing from the processing of and issuance of this permit.

N. **Liability for Costs and Attorneys Fees.** The permittee shall reimburse the Commission and the State of California, through the Office of the Attorney General, in full for all costs and attorneys fees incurred by the Commission and the State of California, through the Office of the Attorney General, in connection with the defense of this permit in a judicial challenge to the permit brought by a party other than the permittee against the Commission, its officers, employees, agents, or successors. Reimbursement for attorneys fees and costs shall include: (1) any court costs and attorneys fees that a court orders the Commission to pay in connection with a successful challenge to the permit, and (2) attorney fees and costs incurred by the Commission and the State of California, through the Office of the Attorney General, in defense of the permit in a judicial challenge to the permit. Notwithstanding these reimbursement requirements, the Commission retains complete authority to independently conduct and direct its defense of the permit in any judicial challenge to the permit.

III. Findings and Declarations

This authorization is given on the basis of the Commission's findings and declarations that the work authorized herein is consistent with the McAteer-Petris Act, the *San Francisco Bay Plan* (Bay Plan), the Suisun Marsh Preservation Act, the *Suisun Marsh Protection Plan*, the Solano County Policies and Regulations Governing the Suisun Marsh, the California Environmental Quality Act (CEQA), and the Commission's amended coastal zone management program for San Francisco Bay for the following reasons:

A. **Natural Resources**. The Bay Plan Subtidal Areas policy 1 states, "[a]ny proposed filling or dredging project in a subtidal area should be thoroughly evaluated to determine the local and Bay-wide effects of the project on: (a) the possible introduction or spread of invasive species; (b) tidal hydrology and sediment movement; (c) fish, other aquatic organisms and wildlife; (d) aquatic plants; and (e) the Bay's bathymetry. Projects in subtidal areas should be designed to minimize and, if feasible, avoid any harmful effects." Subtidal Areas Policy 2 states, "[s]ubtidal areas that are scarce in the Bay or have an abundance and diversity of fish…and wildlife (…sandy deep water or underwater pinnacles) should be conserved. Filling, changes in use, and dredging projects in these areas should therefore be allowed only if: (a) there is no feasible alternative; and (b) the project provides substantial public benefits."

Similarly, the Bay Plan policies on Fish, Other Aquatic Organisms and Wildlife policies state, "[t]o assure the benefits of fish, other aquatic organisms and wildlife for future generations, to the greatest extent feasible, the Bay's…tidal flats, and subtidal habitat should be conserved, restored and increased." The policies also state that specific habitats that are needed to conserve, increase or prevent the extinction of any native species, including special status species, should be protected.

The Bay Plan policies on Tidal Marsh and Tidal Flats also seek to protect both habitat and wildlife. Policy 1 states, in part, that "tidal flats should be conserved to the fullest possible extent" and that "dredging projects that would substantially harm…tidal flats should be allowed only for purposes that provide substantial public benefits and only if there is no feasible alternative." Policy 2 states that "[a]ny proposed…dredging project should be thoroughly evaluated to determine the effect of the project on…tidal flats, and designed to minimize, and if feasible, avoid any harmful effects." The Bay Plan policies on Recreation state, in part that "[s]andy beaches should be preserved, enhanced, or restored for recreational use…."

In addition to the Bay Plan policies, because the project is located within the Suisun Marsh, the Solano County policies are applicable to this project. The Solano County policies and regulations governing the Suisun Marsh include similar policies supporting the protection of habitat and species. Its Agricultural and Open Space Land Use Policy 1 states, "[t]he County shall preserve and enhance wherever possible the diversity of wildlife and aquatic habitats found in the Suisun Marsh… to maintain these unique wildlife resources."

The authorized project involves the mining of approximately 100,000 cubic yards of sand annually from a privately owned tideland parcel. The project would be limited to the extraction of no more than 1.0 million cubic yards of sand from sandy deep water areas of the Bay over a ten-year period of time. Mining will be performed in a manner consistent with the authorization section of this permit. The Middle Ground Island (MGI) lease area consists of a 367-acre lease, which includes subtidal sandy deep water habitat located adjacent to MGI and near the Suisun Channel within Contra Costa County. Much of the lease area around MGI includes shallow water habitats, less than nine feet in depth, which are too shallow for mining. Equipment limitations and agency depth-restrictions, as discussed below, limit mining activity to 50.4 acres of the lease, which are adjacent to and within the federal navigation channel (Exhibit B). Mining activity is not uniformly distributed throughout the lease area, but rather is concentrated in the deeper areas of the lease; the project would affect approximately 14 percent of the total lease area. Special Condition II-A has been added to limit mining methods to the use of stationary potholing only, limit the size of the barge that can be used on the lease area, and place other equipment limitations during mining operations.

Previously, Lind Marine was authorized to mine up to 250,000 cy of sand annually from the Middle Ground lease area. Through the State Lands Commission Environmental Impact Report (EIR) process, Lind reduced their requested sand mining by 100,000 cy and proposed to mine up to 150,000 cy of sand annually at Middle Ground. During the SLC lease renewal, all mining companies requested a cumulative project volume of 2.04 million cy of sand annually, which was a reduction from the previously authorized 2.24 million cy. The FEIR identified an environmentally superior alternative that allowed for up to 1.426 million cy of cumulative mining in San Francisco Bay. The volume allotted to Lind at Middle Ground in the environmentally superior alternative was 199,866 cy. Lind's current authorized project is less than the volume provided in the environmentally superior alternative.

Originally, the permittee requested mining of up to 150,000 cy per year for a total of 1.5 million cy over ten years. Through discussions with the Resource Agencies, examination of the scientific record, and discussions with Commission staff, the permittee agreed to reduce the project volume to less than the environmentally superior alternative, of 199,866 cy of mining annually, included in the State Lands Commission Final Environmental Impact Report (FEIR). Lind Marine's current authorized project will allow an average of 100,000 cy annually, with annual peaks up to 120,000 cy. Lind and Hanson Marine's current cumulative authorized project volumes are consistent with the FEIR volume of 1.426 million cy, which is also the conservation recommendation provided by NMFS. However, the sand volume distribution between all the lease areas in the Bay has been modified from the FEIR to: (1) reduce impacts of mining on Middle Ground, which has been shown to be erosional in the deeper mining portions of the lease; and (2) reduce impacts to sand transport to the outer coast, which will be discussed in greater detail below.

1. **Physical and Biological Effects**. Bay Plan policies direct the Commission to thoroughly evaluate the project's local and Bay-wide effects on the physical and biological resources of the Bay and minimize potential harm.

   a. **Physical Resources.** The project as described includes removal of up to 1.0 million cy of sand from 50.4 acres of subtidal deep water shoals over ten years. Potential project impacts to the physical system include changes to sediment transport patterns, erosion of subtidal areas, and impacts to water currents, velocity, and salinity.

      Sand enters the Bay from several sources, including the Delta, local tributaries, coastal bluffs and cliffs, and the Pacific Ocean via the Golden Gate. In Suisun Bay, the primary source of sand is the Delta, as there are few coastal bluffs or tributaries upstream of the mining areas. The sand appears to be confined to the high-energy deep water channels and some adjacent shoals. Within these channels there are large underwater dunes, and shoals made up of smaller sand "ripples."

      Recent mineralogy and biogenic/anthropogenic provenance studies completed by researchers at the US Geological Survey[1] re-inforce that the Sacramento and San Joaquin Rivers are the primary sand transport pathways to Suisun Bay, with both riverine and tidal flow playing a role in sand transport. Inter-annual variability would potentially provide more sand in high flow years and less in low flow years. However, water control structures in the Delta and other sand sinks limit annual flow variability, with the exception of years with very high precipitation sufficient to move large volumes of sand. There is also some evidence that sand is moving around within the deep water shoals, but the volume of movement is unclear at this time.

      The FEIR examined the bathymetric monitoring of this lease area as well as the Suisun Channel lease area, using data from 1996 through 2007. The analysis indicated that sand appears to be primarily arriving in the mining areas under transport from the surrounding areas. The surrounding area includes the Delta, adjacent sand shoals in Suisun Bay, and the sand transporting through this region to Central Bay. The large surrounding areas of ongoing sand transport and lack of observed change in surrounding morphology during the study period indicate that deposition in the mining areas is likely to continue at similar rates.[2] The exception to this observation was the deeper portions of the Middle Ground lease area, where the resource appears to be limited to the sand currently in place and is showing an erosional trend.[3] Modeling showed reductions in sediment availability in the deeper portions of the Middle Ground lease area by about one percent per year.[4] The FEIR concluded that because the mined areas

[1] Barnard et al. 2013; McGann et al. 2013.
[2] Coast Harbor Engineering 2009 [SLC FEIR Appendix G]
[3] SLC FEIR. 2012, pg. 4.2 -10
[4] CHE Study. SLC EIR pg G-16

are not being replenished at an appreciable rate, sand transport effects beyond the lease area are minimal. However, the information analyzed was primarily from the lease areas themselves as no regular bathymetric surveys are available for the entire region.

The first multibeam bathymetric survey of the MGI lease was conducted in February 2014. Prior to the multibeam survey, Lind conducted bathymetric single beam surveys of the lease area every six months to track changes in the bathymetry of the area. For Middle Ground Island, on average, the available sediment in the Middle Ground shoal lease area was reduced by approximately one percent per year in the deeper channel area. Some deposition (or replenishment) is apparent in this lease area, but the overall trend indicates a fairly consistent depletion of available sediment in the deeper mineable areas of the lease.[5]

Estimates of the existing sand resource availability are difficult without information regarding the composition of in-place sand for the Middle Ground lease area. To date, no comprehensive surveys or data sets that show the actual depth, grain size or quality of the sediment between the sand shoals and the underlying bedrock at Middle Ground have been conducted.[6] A seismic reflection survey through the Delta around the Kirby Hills Fault zone was completed by the USGS and identified unconsolidated sediment to about 200 meters depth, and did not find a clear underlying basement layer or bedrock within the three miles of sedimentary deposits.[7] Thus, indicating that the sand resources may be quite deep, but this cannot be verified without sediment coring data.

In considering the potential change to Bay bathymetry in the lease area, if the maximum volume of sand was mined and nothing else changed, meaning no sand coming in and none going out, the mining activity would lower the Bay floor elevation in the 50.4-acre mineable area of the lease by 3.69 meters (12.98 feet) over ten years. While this is an unlikely situation, this simple analysis provides a magnitude of potential change in bathymetry during the permit period. It is unknown how the mining would affect the surrounding areas, but due to the steepness of the slope adjacent to the island, some sloughing over time could be expected if sand was not being replenished on the Bay floor.

In the FEIR, the analysis of potential changes to tidal hydrology and salinity found little impact to tidal hydrology due to the relatively small lease area. The FEIR states that numerical modeling results for Suisun Bay indicate that changes in hydrodynamics, salinity and sediment transport/morphology are likely to be

[5] Scott Fenical et al., *Technical Report: Analysis of Impacts of Sand Mining in the San Francisco Bay on Sediment Transport and Coastal Geomorphology in San Francisco Bay, Suisun Bay, and Outside the Golden Gate*, 2013.

[6] USGS 1967-68 Acoustic Profiling and 1997 USGS Bathymetry; Chin et al. 2004

[7] Parsons et al. 2002

confined to the vicinity of the mining areas, or limited to adjacent areas similar in size to the lease areas. In addition, any changes to salinity were also expected to be small due to the active interface between the tidal pulsing and the riverine output that changes daily and seasonally in this area. In short, the hydrodynamic drivers in this area are so strong that mining at this level would have little influence over changes in salinity or tidal hydrology.

In addition to mining at Middle Ground Shoal in Suisun Bay, Suisun Associates has requested 1.85 million cubic yards of mining over ten years from the Suisun Channel lease area to the east of this project. The cumulative mining from Suisun Bay would be up to 285,000 cy per year with a maximum of 2.85 million cy of sand removed over ten years. Mining in both Suisun Channel and Middle Ground shoal may be capturing much of the sand supply entering the Bay system from the Delta, except in very high flow years. If this is the case, the sand would likely be coming into the lease area from the surrounding areas, or further reduce the sand transport downstream to supply Bay beaches, Central Bay and the outer coast. However, the area surrounding the project area is large, and limited downstream contributions of sand would likely be spread over a broad area, making measurement of the cumulative impacts of mining in Suisun Bay difficult.

The permittee originally proposed 150,000 cy of mining annually (1.5 million cy total). Through discussions with staff, the permittee reduced the proposal to 100,000 cy per year, with the ability to mine up to 120,000 cy in "peak" demand years while maintaining a rolling average of 100,000 cy annually, and a maximum of 1.0 million cy over ten years. Further, due to the on-demand nature of the mining activity and the limited stockpiling capability of the company's sand yards, sand would only be mined on an "as needed basis." The on-demand nature and the revised volumes minimizes the potential impacts to the physical system while allowing the miners to maintain their business at an economically viable level, as discussed below. In addition, the authorized project volume is less than the volume of sand analyzed in the FEIR under the environmentally superior alternative for Lind's mining operations at Middle Ground. The authorized cumulative mining for all companies on all lease areas in the Bay is consistent with the FEIR environmentally superior alternative and with the NMFS conservation recommendations.

The Bay Plan Recreation policies state that "[s]andy beaches should be preserved, enhanced, or restored for recreational use…consistent with wildlife protection." Historically, the west side of San Francisco had broad beach and dune systems, and the east side of Central Bay had many beaches.[8] Though the Bay shoreline has been altered, some sandy beaches still exist, and provide shoreline protection, habitat, and recreational opportunities. Little is known about the transport dynamics to beaches and therefore, it is difficult to assess

[8] R. Olmstead and N. Olmstead, *Ocean Beach Study: A Survey Of Historic Maps And Photographs* (City of San Francisco, California, February 23, 1979., n.d.); EcoAtlas, California Wetlands Monitoring Workgroup (CWMW), accessed June 27, 2014, http://www.ecoatlas.org.

the project's potential impacts to them. But, the extent that the authorized mining would affect Bay beaches is not currently understood. The reduced level of mining authorized herein may reduce potential impacts to beaches along shoreline areas downstream of the project site, but without additional transport information this conclusion is largely speculative. With sea level rise, increasing amounts of sand will likely be needed to prevent erosion and to allow the landward migration of Bay beaches, as well as supplying the outer coast beaches that protect infrastructure and development.[9]

In addition to reducing the authorized volume of sand mining, Special Condition II-C(2) requires multibeam surveys and a change analysis every five years to further assess mining impacts on Bay bathymetry. To deal with the uncertainty and lack of information regarding sand transport and resource availability, Special Condition II-F(1)(b) requires the formation of a Sand Studies Technical Advisory Committee (SSTAC) and Independent Science Panel (ISP) specifically directed at better understanding the physical system and the impacts that sand mining projects have on the sediment system. The SSTAC will develop management questions, a prioritized research strategy and critically evaluate study designs to ensure that data gathered will be robust and can address sand resource management questions. Special Condition II-F(1)(a) details how funds will be provided by the permittee for sediment studies. Special Condition II-F(4)(b) requires that the Commission be updated regarding the progress of the SSTAC and ISP and on the conclusions of scientific findings. Special Condition II-H allows the Commission to modify, suspend or revoke this permit if significant adverse impacts resulting from the authorized project are identified and cannot be further minimized or mitigated.

b. **Biological Resources.** The Commission's Bay Plan policies on Subtidal Areas, Fish, Other Aquatic Organisms and Wildlife, and Tidal Marsh and Tidal Flats, in summary, state that sandy deep water habitat for native species should be protected and conserved, particularly where they are essential for the survival of special status species. As with the physical impacts, the policies require thorough evaluation of the project impacts and the minimization of harmful effects. When listed species may be affected, the policies require consultation with the appropriate resource agencies and the applicant to obtain "take" authorization(s).

The *Solano County Policies and Regulations Governing the Suisun Marsh* (Local Protection Plan) states "[t]he Suisun Marsh represents an area of significant aquatic and wildlife habitat that is an irreplaceable and unique resource to the residents of Solano County, the State and the Nation…. Because of its size and estuarine location, it supports a diversity of plant communities, which provides habitats for a variety of fish and wildlife, including several rare and endangered

[9]Barnard et al., 2013

species." Additionally, the *Solano County Policies and Regulations Governing the Suisun Marsh* cites similar policies to the Bay Plan regarding the protection of habitat and wildlife. The LPP Agricultural and Open Space Land Use Policy 1 states, "[t]he County shall preserve and enhance wherever possible the diversity of wildlife and aquatic habitats found in the Suisun Marsh…to maintain these unique wildlife resources."

Potential biological impacts associated with this project include: removal of habitat, entrainment and impingement of native species, potential "take" of listed species, and increased suspended sediments, which may cause respiratory issues. Entrainment occurs when an organism cannot swim or escape from the mining equipment and is sucked into the equipment. Impingement occurs when an organisms is trapped against a screen or some piece of equipment and cannot swim away.

NMFS defines habitats as "those waters or substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." Because the project occurs subtidally, "habitat" in this analysis includes both the sandy-bottom substrate of Suisun Bay and the overlying open-water areas. Sandy deep water habitat areas only account for about eight percent of the Bay floor, and are thus considered relatively scarce in the Bay. The sandy deep water shoals in Suisun are even more unique in that they occur in an area that changes seasonally between brackish and freshwater communities, depending on the fresh water flow from the Delta. Sand is often considered a poor habitat for many benthic organisms, but there are some species that are specifically adapted to transitory environments and can survive in these dynamic environments.

The sandy shoals in Suisun Bay are characterized as having relatively low species diversity compared to Central Bay[10] and are considered highly invaded. The benthic community is dominated by two species of invasive clam (*Potamocorbula amurensis*, formerly *Corbula amurensis*, and *Corbicula fluminea*)[11], yet also contains other non-mobile invertebrate species (such as worms) living within the substrate. Organisms living within or on top of the sandy substrate would likely be impacted by the proposed project through direct removal of the top-layer (biologically active layer) of the benthic community, prey loss, habitat removal and fragmentation, or smothering by large debris disposed overboard during the mining operations.

Bottom-dwelling species may be impacted through entrainment, impingement, or habitat alteration. The direct entrainment of bottom-dwelling species may occur through the suction pipe of the mining equipment during operations. Disturbances to the Bay floor from mining tracks may persist over time,[12] as shown in the 2014 multibeam survey of the mining area, and physically change

[10] BCDC Sand Mining Science Panel. 2014.
[11] BCDC Sand Mining Science Panel. 2014.
[12] NMFS Biological Opinion. 2015

the available habitat. These physical alterations include changes to grain size, shape of the sand shoals, and depth.[13] Biologically, the mining activities may cause changes in species composition, biomass, and diversity of the benthic community, but this is not well understood. Indirect impacts to important open-water species within the Bay may occur from a loss of benthic prey or decreased productivity.

In the Middle Ground Shoal area there are fifteen dominant fish species, including Pacific herring, striped bass, Shokihaze goby (invasive), yellowfin goby, Pacific staghorn sculpin, starry flounder, longfin smelt, and plainfin midshipmen, which account for 97% of the bottom dwelling fish community.[14] According to the FEIR, "calculated entrainment estimates indicated that Pacific Herring are the most entrained fish species[15] and entrainment by sand mining could be as much as 7.9% of the regional abundance index for Pacific herring in Suisun Bay. Excluding Pacific herring, the entrainment levels for all other species were estimated to represent between <0.1 % and 0.5% of the total abundance index for each taxa within Suisun Bay." Since completion of the entrainment study, several minimization measures have been added that will likely avoid or substantially reduce entrainment of juvenile and adult open-water fish species. These measures include seasonal and overall volume restrictions, depth restrictions, and installation of fish screens over intake vent pipes on the mining equipment.

Along with bottom dwelling fish, the sandy habitat is home to macroinvertebrates such as crabs and shrimp. In the Middle Ground Shoal and Suisun Marsh areas, the California Bay shrimp are more heavily entrained.[16] The California Bay shrimp is a commercially important shrimp species in the Bay and sand mining activities have been estimated to entrain about three to six percent of the commercial landings. These invertebrates are important prey items for fish and other wildlife.

In addition to the Bay bottom, the project has potential impacts to the open water community through potential entrainment and impingement through the water intake (vent) pipe, and the creation of a discharge plume with an increased concentration of fine-grained sediment, which can persist for approximately three to four hours after completion of the mining activity, until fully dissipating to background levels. Direct impacts to the open-water communities from increased water column turbidity may include: impacts to visual foraging, increased susceptibility to predation and interference with migratory behavior[17], delayed hatching, and physiological impacts, including

[13] BCDC Sand Mining Science Panel. 2014
[14] *Ibid*.
[15] AMS Fish Entrainment Estimate Study. 2009.
[16] *Ibid*.
[17] NOAA NMFS. 2015. Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation

clogged gills or eroded gill and scales.[18] Indirect impacts to important open-water species within the Bay may occur from a loss of benthic prey items or decreased productivity resulting from turbidity impacts to the planktonic and aquatic plant communities, which form the base of many food webs in the Bay. NMFS found that the likelihood of fish exposure to the elevated turbidity levels in the overflow plume on any given day would be low since there is a minimum of one full tidal cycle between mining events. Additionally the size of the overflow plume is relatively small compared to the amount of adjacent open-water areas in Suisun Bay.[19]

The San Francisco Bay has been designated as critical habitat for species of fish listed under the federal Endangered Species Act such as the Chinook salmon and the Delta smelt. The Estuary has also been designated as essential fish habitat for managed fisheries under the federal Magnuson-Stevens Conservation and Fisheries Management Act. The endangered Sacramento River Winter-run Chinook (*O. tshawytscha*), threatened Central Valley steelhead (*Oncorhynchus mykiss*), Central Valley Spring-run Chinook (*O. tshawytscha*), the threatened Delta smelt (*Hypomesus transpacificus*) and longfin smelt (*Spirinchus thaleichthys*) that either live within or migrate through the project area.

NOAA National Marine Fisheries Service (NMFS), the US Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW) all consulted on this project and issued biological opinions (NMFS, USFWS), and incidental take permit (CDFW). The federal agencies determined that the project would adversely impact Delta smelt, salmonids and green sturgeon, but concluded the project would not jeopardize the continued existence of these species. CDFW made a similar determination for salmonids and longfin smelt in its incidental take permit, but found that with the minimization measures and the purchase of mitigation credits the project-related impacts were minimized and fully mitigated. Although the Resources Agencies agree that the project is likely to impact species and their habitat in the short-term, the project's long-term impacts on habitat utilization, recruitment back into the disturbed areas, direct removal of prey items for fish, changes to foraging behavior and recovery of the benthic community is not well understood.[20] The scientists participating in BCDC's Sand Mining Science Panel (2014) acknowledged that little is known about how fish and other organisms in the Bay utilize sandy deep-water habitats and shoals.[21]

To reduce potential impacts, the permittee consulted with the resource agencies to identify and implement a number best management practices and minimization measures that were then incorporated into the biological opinions

[18] SLC FEIR
[19] *Ibid*.
[20] NMFS Biological Opinion. 2015 pg 47
[21] *Ibid*.

and incidental take permits. Theses measures and best management practices are also incorporated in the Commission's special conditions herein. In addition, for this lease area, only 50.4 out of 367 acres (14 percent) are mined due to shallow water, equipment constraints and minimization measures to protect habitat and species. Special Conditions II-D(1)(a)-(d) are included to reduce impacts to native and special status species and their habitat. By mining in the limited area, habitat and species impacts are greatly reduced.

In addition, the NMFS biological opinion also determined the project would have adverse effects on Essential Fish Habitat (EFH) in the Bay due to the removal of the substrate, destabilization and potential slumping of shallow water habitat areas adjacent to the mining area, removal of potential food prey items for species feeding on benthic organisms, and increased turbidity. Because these impacts and the potential recovery of the benthic community are not well understood, NMFS has required that the applicant provide funding to conduct a benthic study to evaluate the impacts of mining activities on species composition, densities, biomass of dominant taxa, species diversity, and impacts to substrate grain size.

The Bay is also home to a number of aquatic plants and algae (seaweeds) native to the area, including eelgrass, pondweeds and varieties of seaweeds. These plants and algae are an important habitat for many invertebrates, which provide a food source for many fish species. Subtidal Policy 1 directs the Commission to evaluate the impacts of the proposed project on the Bay's aquatic plants. Aquatic plants and algae need light to undergo photosynthesis, and seaweeds generally need a hard substrate to attach to in order to withstand tides and currents. Due to the project's deep-water nature, limited light penetration and shifting sands found in the deeper portions of the lease area, it is assumed that there are no aquatic plants or algae living in the mineable areas of the lease. However, there appears to be native pondweeds (*Stuckenia sp.*) growing in the shallow subtidal areas around Middle Ground Island.[22] Localized increase in turbidity associated with the overflow plume could have an adverse impact on these plants if the suspended sediment settles on the pondweed blades and prevents or limits photosynthesis. By adhering to the minimization measures of Special Condition II-D(1)(a) (Buffer Zones), Lind shall limit their mining activity to areas of deeper water and remain at a distance of 200 feet from the islands' edge and a distance of 250 feet from waters shallower than minus 9 feet MLLW. These actions would likely minimize settlement of fine sediments on adjacent pondweed beds and reduce the undermining of shallow water habitat utilized by pondweeds around Middle Ground Island.

[22] Subtidal Habitat Goals Report. 2010.; Boyer Lab Subtidal Aquatic Vegetation Maps

There appear to be two mechanisms by which the authorized project could facilitate spread of invasive species, through the transport of invasives by the mining equipment or habitat disturbance that then allows invasive species to colonize the newly disturbed substrate. According to permittee, the proposed mining activity uses barges and tugs that do not leave the San Francisco Bay. Sand is mined from the Suisun Bay, which has a highly invaded community, mostly dominated by two species of invasive clams (*Potamocorbula amurensis* and *Corbicula* fluminea), invasive zooplankton and vegetation. It is unlikely that invasive species would be transported and spread by the mining equipment as it moves between mining operations and the offloading yards. To date, there has been no identified problem from using the mining equipment in Suisun Bay and other parts of the Bay. The different salinities between the highly marine environment of Central Bay and the brackish water environments of Suisun are also likely to limit the spread of invasive species. Water from one mining site in the Bay is not transported to another mining site or offloading location, thus limiting transport of invasive species.

In order to minimize impacts to Bay habitat and listed species, the following special conditions have been included in this recommendation:

Special Condition II-D(1)(a) limits the depth in which mining can occur to minimize impacts to smelt spawning habitat during specific times of year and limit the entrainment of smelt eggs and larval smelt. Special Condition II-D(1)(a) also provides a buffer zone around any shoreline area, such as around Middle Ground Island, and any shallow water habitat that is less than minus nine feet MLLW depth as protection for critical smelt spawning habitat in accordance with USFWS limits in the Biological Opinion issued on October 22, 2014.

Special Condition II-D(1)(c) limits pump priming to within three feet of the Bay floor and will help minimize the entrainment of fish species within the Bay. This minimization will reduce entrainment of listed fish species, however it will not likely prevent the entrainment of many mobile and non-mobile, bottom-dwelling, invertebrate species living on or near the Bay floor. Although, for many of these species, the number of entrained individuals accounts for only a small portion of the total population within the Bay and would not likely cause significant reductions in the populations.[23] The permittee has stated that the equipment is maintained in the substrate during mining activities to the extent feasible, which further reduces the entrainment of fish during the project. This operational constraint may also help reduce entrainments of macroinvertebrates.

Special Conditions II-F(2)(a) through II-F(2)(g) require that a benthic study be conducted, in collaboration with NMFS and other agencies, to assess the impacts of sand mining on benthic communities. The permittee and Hanson Marine

[23] AMS Fish Entrainment Estimates Study. 2009.

together agreed to spend up to $275,000 for a study assessing the impacts of mining on the benthic community in San Francisco Bay. Special Condition II-F(2)(a) gives the Benthic Ecology TAC (BETAC) the discretion to determine if Suisun Bay should be included in the benthic ecology study and the extent of its inclusion (including number of sample points, allocated funds, etc.). The $19,250 required in Special Condition II-F(2) is Lind's contribution to the overall $275,000 study cost based upon the volume for the authorized project at Middle Ground. Additionally, Special Condition II-F(4)(c) ensures that the Commission will receive a report containing the findings of the benthic study in a timely fashion, following the completion of the study.

Special Condition II-F(3) requires the permittee to conduct an effluent study and further evaluate the toxicity, extent and magnitude of the overflow plume created during operations. In addition, Special Condition II-F(4)(d) requires the submittal of the effluent study report early in the permit period, which will further inform the Commission of the impacts of the authorized project on open-water habitat during mining operations.

Special Condition II-E(1) through II-E(3) requires the permittee to comply with the Regional Board's WDR/WQC and the Self-Monitoring Program to minimize impacts to Bay species. If violations of the WDR/WQC are identified, Special Condition II-E(3) insures that the Commission will be notified of such violations prior to further continuation of the project.

c. **Feasibility Analysis and Public Benefits**. Subtidal Areas Policy 2 states, "[s]ubtidal areas that are scarce in the Bay or have an abundance and diversity of fish…and wildlife (…sandy deep water or underwater pinnacles) should be conserved. Filling, changes in use, and dredging projects in these areas should therefore be allowed only if: (a) there is no feasible alternative; and (b) the project provides substantial public benefits."

The sand shoals around Middle Ground Island are fairly deep, though the actual quantity and quality of the sediments below the surface are not known. The required studies herein will investigate the physical processes that govern sediment transport, and the types and quantity available will provide further understanding of the resource availability within the lease area. In addition, if the studies show that the authorized project is not conserving the resource, the Commission has the ability to reopen the permit pursuant to Special Condition II-H of this authorization.

As described above, the applicant originally requested 1.5 million cy of mining over ten years, but has lowered the volume of sand requested for both annual mining and the ten-year total to reduce impacts to the resource and the habitat. The project, as conditioned herein, will minimize potential impacts of the project through best management practices and minimization measures. In addition, due to site restrictions, only 14 percent of the lease area is affected by mining,

thereby conserving the remaining 86 percent of the lease area. While complete prohibition or further reduction of mining volumes would eliminate or reduce impacts from the project, the policy includes consideration of feasible alternatives and public benefits of using Bay resources. In order to find this project consistent with these Bay Plan policies, the Commission can consider environmental impacts outside of its immediate authority and balance these considerations.

The term "feasible," as employed under the California Environmental Quality Act (CEQA), means "capable of being accomplished in a successful manner within a reasonable period of time taking into account economic, environmental, legal, social and technological factors."[24] The question of feasible alternatives should take into consideration the resources of the company proposing the project. The permittee has no other currently permitted sand resources available either from local or regional quarries or foreign markets. Therefore, the only sand available to the permittee is through the State Lands Commission lease at Suisun Channel and the Grossi lease discussed herein. It is not feasible at this time for Lind to provide sand to the construction industry from other sources.

The historic mining record for this lease area and permittee, the maximum ten- and fifteen-year averages were 182,701 cy and 168,124 cy respectively. The SLC FEIR showed that the deeper portions of the Middle Ground Island lease are erosional and decreasing in volume by about one percent per year. The permittee has reduced the mining volume requested from the historic level of mining on this lease in exchange for higher levels of mining on the Suisun Associates lease, where there are potentially less impacts on resource availability and more acreage available for mining activities.

While complete prohibition or further reduction of mining volumes would eliminate or reduce impacts from the project, the policy includes consideration of feasible alternatives and public benefits of using Bay resources. In order to find this project consistent with these Bay Plan policies, the Commission can consider environmental impacts outside of its immediate authority and balance these considerations with impacts to the Bay. In discussions with the permittee, Commission staff has determined that it is not feasible at the time for Lind to provide sand to the construction industry from an alternative source. However in these discussions, it was determined that a reduced volume of mining is feasible as long as the mining levels are at an economically viable level. The authorized project represents a reduced level of mining that reduces impacts to Bay species and sand resources and is economically viable for the permittee.

The sand mined from this lease area is used in the construction industry as an ingredient in asphalt, concrete, back fill for trenching and other purposes. The public benefits of the proposed project include the ability to use a local resource

[24] CEQA Guidelines, § 15364; Pub. Resources Code, § 21061.1

close to the end users, which is easily transported in large quantities by water. In delivering the sand to offloading yards close to users, truck traffic is significantly reduced. When truck traffic is reduced, wear and tear on roadways is reduced and emissions from the trucks are also reduced, emitting less greenhouse gases into the atmosphere. Further, the production of land-based sand is a more resource intensive process, using energy and water to process quarried sand. Whereas, sand mined from the Bay is offloaded and sold directly to customers.

In addition, the mined sand is used in building and maintaining public and private roadways, bridges and buildings, providing both infrastructure and jobs for the local economy. Local sand, while insufficient to support the full aggregate demand, helps fulfill regional demands and address shortfalls in land-based permitted reserves. These public benefits should be balanced against the project's impact on the sediment system, subtidal and tidal habitats, and species. The authorized project, as conditioned herein, will reduce environmental impacts and provide public benefits for the Bay Area.

In recognition of the reduced sand supply to the Bay and coast, it is important to consider other potential sources of sand. In the future, consideration should be given to whether these leases will remain viable, and whether other activities, such as mining sand from the adjacent federal channels where maintenance dredging occurs, or diversifying the business so that recycled materials may be used as a substitute for Bay sands over time.

d. **Mitigation.** The Commission's policies on Mitigation state that "[p]rojects should be designed to avoid adverse environmental impacts to Bay natural resources such as…fish, other aquatic organisms and wildlife habitat, subtidal areas…or tidal flats. Whenever adverse impacts cannot be avoided, they should be minimized to the greatest extent practicable...and measures to compensate for unavoidable adverse impacts to the natural resources of the Bay should be required." Additionally, Bay Plan Mitigation policy 2 states in part, "[i]ndividual compensatory mitigation projects should be sited and designed within a Baywide ecological context, as close to the impact site as practicable, to: (1) compensate for the adverse impacts; (2) ensure a high likelihood of long-term ecological success; and (3) support the improved health of the Bay ecological system…." Bay Plan Mitigation Policy 6 states, "[m]itigation should, to the extent practicable, be provided prior to, or concurrently with those parts of the project causing adverse impacts."

The impacts to Bay resources from the proposed mining activity would include impacts specific to the lease areas as well as potential impacts beyond the lease boundaries. As previously discussed in other sections of this recommendation, the potential impacts from this project that cannot be avoided all together within the lease include: (1) entrainment of special status and native species

through the suction pipe; (2) entrainment of the eggs or larval stages of special status and native species through the screened water intake pipe; (3) temporary increases in suspended sediment loads; (4) degradation of sandy habitat by removal of prey and benthic invertebrates; and (5) degradation of habitat through bedform disruption and modification of substrate, both in changes in the grain size of the sand and sand wave formation.

In addition, potential impacts beyond the lease boundaries include the entrainment of fish, including special status species, eggs, larvae and plankton that move in and out of the lease boundaries as part of their life cycle; temporary increases in suspended sediment concentrations while mining is occurring; and reduction in sand supply to the system, including Bay shoals, the San Francisco Bar and potentially southern Ocean Beach.

Special Conditions II-D(1)(a) through II-D(1)(d) are included, which reduce the project impacts to threatened and endangered species through the installation of a fish screen, seasonal reductions in mining volumes, and operational limitations during certain months of the year. However, impacts to EFH for Pacific Groundfish, Pacific Coast Salmon, and Coastal Pelagic species, as determined by NMFS, cannot be further reduced or minimized due to the nature of the mining activity and direct removal of prey items, displacement of preferred forage species, and habitat disturbance. Therefore, mitigation is required.

When unavoidable impacts are identified (i.e., impacts under the Bay Plan that cannot be avoided altogether), the Bay Plan policies on mitigation provide guidance regarding how those impacts should be mitigated. The mitigation policies state that "individual compensatory mitigation projects should be sited and designed within a Bay-wide ecological context, as close to the impact site as practicable, to compensate for the adverse impacts," ensure success and support the improved health of the Bay ecology. They further state that the Commission should consider benefits to humans from Bay natural resources, that the rationale for the mitigation should be clear, the siting of the mitigation should be in an area where adjacent land uses and connections to other habitats improve the potential for successful outcomes, and that mitigation should be provided prior to or concurrent with the proposed project.

The policies also provide that when compensatory mitigation is necessary, a mitigation program should be reviewed and approved by or on behalf of the Commission as part of the project, and describe the "[p]rovisions for the long-term maintenance, management and protection of the mitigation site, such as a conservation easement, cash endowment, and transfer of title." The mitigation programs are also expanded by the Commission's policies that state that they

"…should be coordinated with all affected local, state, and federal agencies having jurisdiction or mitigation expertise to ensure, to the maximum practicable extent, a single mitigation program that satisfies the policies of all the affected agencies."

These policies also offer opportunities to combine mitigation efforts and describe the framework necessary to allow flexibility in mitigation types in stating: "[t]o encourage cost effective compensatory mitigation programs…the Commission may extend credit for certain fill removal and allow mitigation banking provided that any credit or resource bank is recognized pursuant to written agreement executed by the Commission.… Mitigation banking should only be considered when no mitigation is practicable on or proximate to the project site." The policies further define when fee based mitigation is a potential option. According to the applicants and the Resources Agencies, mitigation bank credit is the only current option for impacts to listed species that may be present in the project area.

In response to these policies, the permittee consulted with NMFS, USFWS, and CDFW in regards to impacts to critical habitat, essential fish habitat, and threatened, endangered and managed fish species that could not be avoided or minimized further, and has incorporated the Resource Agencies' recommendations into their proposed mitigation plans. In order to compensate for impacts to Delta smelt, longfin smelt and salmonids while mining in Suisun Bay (which includes Lind Marine's activities at the Middle Ground and Suisun Associates lease areas), the permittee purchased 0.11 acres [25] of freshwater habitat mitigation credits at Liberty Island Conservation Bank in Yolo County. The mitigation bank is located at a distance from the mining activity, however, it is the only mitigation bank available for fish impacts, and has been determined to be suitable compensatory habitat for salmonids by both CDFW and NMFS. CDFW also approved the bank as suitable for compensatory mitigation for incidental take of longfin smelt.

To address the impacts of sand mining to Essential Fish Habitat (EFH) in Central Bay and Suisun Bay, Hanson Marine, Suisun Associates and Lind Marine together proposed, as mitigation, to contribute to CalRecycle's Estuary Clean Up Project in an amount not to exceed $100,000 for all mining areas in San Francisco Bay. The Clean Up Project clears debris (marine debris, old pier pilings, abandoned vessels) from the Estuary in order to improve fish habitat. Lind Marine will contribute to the Clean Up Project by providing $16,500.00 in the form of funds or services (equipment, time, etc.) to compensate for its activities at the Middle Ground and Suisun Associates lease areas.

[25] CDFW Incidental Take Permit Amendment One. 2014

Special Condition II-D(3)(b) requires that the permittee provide funds or equipment to assist with CalRecycle's Estuary Clean-Up Program to mitigate for impacts to EFH. While this type of mitigation may not occur near the project area, it is likely to benefit habitat and fish species within the Bay through the removal of creosote pilings, which are known to contains polycyclic aromatic hydrocarbons that can be toxic to some species within the Estuary[26] and/or the removal of marine debris from the San Francisco Bay: thus restoring some subtidal areas to more natural habitat.

Special Condition II-D(3)(a) has been added to require the purchase of mitigation credits at Liberty Island Conservation Bank as compensatory mitigation for the take of longfin and Delta smelt and salmonids during the authorized project. This special condition is consistent with the requirements of the Resource Agencies for all of Lind's sand mining projects, which originally requested 150,000 cy annually from Middle Ground, plus an additional 150,000 cy of mining on the Suisun Associates lease. Lind has fully mitigated for the take of listed species based upon their 300,000 cy project volume. The authorized project volume under this permit now allows for 100,000 cy annual mining and up to 120,000 cy "peak volume", which is below the project volume for which the permittee already purchased mitigation credits.

For the reasons described above, the Commission finds that the project as conditioned, conserves the resource to the extent feasible, minimizes harmful effects to habitat and species, has no feasible alternative at this time, and provides a substantial public benefit and therefore is consistent with the Bay Plan policies on Subtidal Areas; Fish, Other Aquatic Organisms and Wildlife; Tidal Marshes and Tidal Flats; Mitigation, and Recreation.

B. **Water Quality.** The Commission's Bay Plan Water Quality Policy 1 states, "Bay water pollution should be prevented to the greatest extent feasible…. Fresh water inflow into the Bay should be maintained at a level adequate to protect Bay resources and beneficial uses." Water Quality Policy 2 states, "[w]ater quality in all parts of the Bay should be maintained at a level that will support and promote the beneficial uses of the Bay as identified in the San Francisco Bay Regional Water Quality Control Board's Water Quality Control Plan, San Francisco Bay Basin and should be protected from all harmful or potentially harmful pollutants. The policies, recommendations, decisions, advice and authority of the State Water Resources Control Board and the Regional Board, should be the basis for carrying out the Commission's water quality responsibilities."

The waters of the Bay are an important primary element[27] of the habitat for various listed and native species in the San Francisco Estuary and should be maintained at a level adequate to protect Bay Resources. The salinity and turbidity of the Bay waters influences the distribution of organisms living in the estuary, as well as those transiting through portions of the Bay along their migratory routes. Different species are adapted

[26] San Francisco Bay Subtidal Habitat Goals Report. 50-Year Conservation Plan. 2010. State Coastal Conservancy. pp 85
[27] USFWS Biological Opinion. 2014.

to tolerate different salinity ranges and turbidity levels. The permitted project will likely deepen parts of the lease area, but these impacts do not extend much beyond the lease areas and the level of mining would not likely contribute significantly to changes in the salinity in Suisun Bay and movement of X2 farther upstream into the Delta.[28]

The Water Board reviewed the project and determined that the project is not likely to result in "water quality less than the prescribed policies."[29] The Water Board further determined that the currently mined shoals would have at lease a 10:1 dilution for any particular "characteristics" of concern and that the discharge would not cause a nuisance to the Bay.[30]

The short-term increased water column turbidity during the permitted mining activities may have a variety of impacts to species inhabiting the water column. For instance, the increased turbidity may be beneficial for some species such as potentially enhancing Delta smelt feeding success and predation avoidance. However, high turbidity levels may also lead to physiological and behavioral impacts to other Bay species. There may additional impacts to migration, respiration, feeding, etc. In the CEQA analysis, the State Lands Commission found that the potential impacts to species from increased turbidity of the overflow plume would be less than significant.[31] The material that would be mined mostly consists of sandy material, with a small amount of fine-grained material and is believed to be free of contaminants due to its low carbon content. The material being mined generally contains less than ten percent fines[32], which would greatly reduce the potential concentrations of contaminants found in the sand.

The Water Board issued a Final Order for the Waste Discharge requirements on January 21, 2015, which included a Self-Monitoring and Reporting Program (SMP) and is requiring Lind to perform a study to evaluate the discharge and receiving water quality. The effluent and receiving water study would "characterize the overflow effluent toxicity and composition (suspended sediment, conventional pollutant, and toxic pollutant concentrations), the spatial and temporal extent of the overflow plume in the receiving water based on the magnitude of suspended sediment concentrations within the plume, and would compare overflow plume suspended sediment concentrations to background (ambient) conditions."[33] The study would also be designed to capture the seasonal and tidal variation in the discharge and water quality of the receiving waters. The Water Board provisioned the waste discharge requirements and water quality certification with a reopener clause that would allow the project to be reassessed if the study indicates that there are adverse impacts to water quality or beneficial uses of the receiving waters, or if new regulations or policies, are adopted during the permitted period. Special Conditions II-F(3) and F(4)(d) included herein, require the effluent study and that the results of the study be provided to Commission staff so impacts to Bay

[28] USFWS Biological Opinion. 2014.
[29] SFRWQCB Final Order. 2015.
[30] *Ibid*.
[31] SLC FEIR
[32] SLC FEIR
[33] *Ibid*.

waters can be further analyzed. In the event that the study determines there are significant impacts to water quality or beneficial uses of the Bay waters, such as habitat for fish and aquatic wildlife, Special Condition II-H gives the Commission the ability to modify the permit to reduce impacts, reopen or revoke the permit if significant impacts are identified and if the applicant does not agree to appropriate project modifications.

For the reasons described above, the Commission finds that the project is consistent with its law and policies on Water Quality.

C. **Scientific Knowledge**. The Bay Plan Subtidal Areas Policy 5 states, "[t]he Commission should continue to support and encourage expansion of scientific information on the Bay's subtidal areas, including: (a) inventory and description of the Bay's subtidal areas; (b) the relationship between the Bay's physical regime and biological populations; (c) sediment dynamics, including sand transport, and wind and wave effects on sediment movement; (d) areas of the Bay used for spawning, birthing, nesting, resting, feeding, migration, among others, by fish, other aquatic organisms and wildlife; and (e) where and how restoration should occur. Similarly, the Bay Plan's Dredging and Tidal Marsh and Tidal Flats policies call for increasing scientific understanding of impacts from projects to the Bay's sediment system, as well as habitat impacts. As discussed above, there are a number of unknowns regarding the sediment supply to the Bay, the magnitude of sand mining impacts on sand transport and replenishment of sand resources on the lease areas, bathymetric change around the lease areas, the resource availability. Additionally, further research is needed to identify the impacts of sand mining on benthic organisms within the benthic community and the recovery of the community after the mining activities.

   Data collected to date indicates that the sediment supply to the Bay is decreasing. Rough estimates of the amount of sand coming into the Bay can be made from direct measurements of sand in suspension and moving as bedload and have also been interpolated by scientists in areas where direct measurements are lacking. Further information and understanding of the amount of the sediment system, including the amount of sand entering the Bay, the amount of sand available for mining in the Bay, and the supply of sand in transport to the offshore Bar and coast beaches is critical for the management of the resource. Special Condition II- F(1) has been added to provide funds for the coordination of a Sand Studies Technical Advisory Committee (SSTAC) that in consultation with the independent science panel (ISP) will develop resource management questions and will identify and prioritize studies to inform those questions. The SSTAC will be involved in the review of the design of the studies in addition study results and analysis. The SSTAC and the ISP will provide input to Commission Staff on the allocation of the $1.2 million dedicated to planning, design and execution of sand studies. Special Condition II-F(2) requires that a benthic ecology study be conducted and Special Condition II-F(4) ensures the Commission will be briefed on the progress of studies and/or the results after the completion of the studies.

The ability to track the changes in the bathymetry of the Bay over time is important for understanding the impacts of the permitted project on mineral resources within the Bay, as well as potential changes in tidal hydrology and sediment movement. Special Conditions II-C(2) and C(3) of this permit requires regular bathymetric surveys, which will then be compared with prior surveys to evaluate the change in the Bay's bathymetry over time and identify any impacts from the authorized project. Two surveys will be conducted over the permit period, with surveys being conducted approximately five years apart. Reports on bathymetric surveys will be submitted to Commission staff for review.

The impact on the overall utilization of habitat by certain species from permitted sand mining is not well understood. Subtidal Areas Policies 5 (b) and (d) requires increased scientific understanding of the relationships of biological organisms to the subtidal areas of the Bay. Additionally, this policy also requires expansion of knowledge on distribution and habitat utilization of various parts of the Bay by different species. Special Condition II-F(2) requires the permittee provide funds for the development and implementation of a benthic study, which will utilize various techniques, to assess sand mining activities on benthic habitats in Central San Francisco Bay (Benthic Work Plan Process date July 9, 2014). However, this Work Plan specifically addresses impacts of sand mining activities in Central Bay, which may or may not provide information regarding sand mining impacts in Suisun Bay. Special Condition II-F(2)(a) allows the BETAC to consider the need for the benthic study to include the community composition in Suisun Bay and examination of the project authorized herein. If the BETAC determines that study of Suisun is warranted, it may include Suisun Bay in its study plan. Pursuant to Special Condition II-F(2)(g) and F(4)(c), the benthic ecology and sand mining impact study must be completed and the final report submitted to the Commission for further consideration.

Subtidal Areas Policy 5 (d) requires the expansion of knowledge of areas of the Bay used for spawning, feeding, migration, etc. The authorized project will result in water and fine-grained material being discharged overboard during mining vessel operations. This discharge will result in the creation of an overflow effluent plume. Special Condition II-F(3) has been incorporated into this permit and requires the permittee to conduct and report the findings of an effluent study, which will to characterize the effluent and receiving water quality. The study will specifically address the overflow plume toxicity and composition; spatial and temporal distribution in the receiving waters; and the magnitude of the suspended sediment concentrations within the plume as compared to background levels. This will provide the Commission with specific information regarding the extent of localized increases in suspended sediment and the potential impacts to species of the Bay.

Special Condition II-F(4)(d) requires that Lind submit a copy of the final effluent study report within 60 days of completing data collection. This condition will ensure timely delivery of the study results to Commission staff for review. If the Regional Water Board determines that the effluent has harmful effects and the conditions of the SMP or the WDR/WQC need to be changed, the permittee shall notify Commission staff.

At the conclusion of each study the permittee shall provide a briefing to the Commission on the study findings and potential next steps. In this way, the Commission will have the opportunity to discuss the outcomes of the study, have a better understanding of the resource and the potential impacts of the project and future authorizations.

For all the reasons listed above, the Commission finds that the project is consistent with the Commission's law and policies related to the expansion of scientific information about the Bay's subtidal areas and potential impacts from this project.

D. **Dredging**. According to the McAteer-Petris Act section 66664.4, "[d]redging means the extraction of sand, mud or other materials from San Francisco Bay, its tributaries, the delta, or coastal state waters." The authorized sand mining project is considered analogous to dredging within San Francisco Bay. The Bay Plan Dredging Policy 2 states that "[d]redging should be authorized when the Commission can find: (a) the applicant has demonstrated that the dredging is needed to serve a water-oriented use or other important public purpose, such as navigational safety; (b) the materials to be dredged meet the water quality requirements of the San Francisco Bay Regional Water Quality Control Board; (c) important fisheries and Bay natural resources would be protected through seasonal restrictions established by the California Department of Fish and Game, the U.S. Fish and Wildlife Service and/or the National Marine Fisheries Service, or through other appropriate measures; (d) the siting and design of the project will result in the minimum dredging volume necessary for the project…."

The sand mining authorized herein serves an important public purpose by providing a local source of sand to the Bay Area construction industry: reducing greenhouse gas emissions, truck traffic, and impacts to Bay Area roadways. The sand mining authorized herein is obtained from a local source and transported by barge, which allows for financial savings for public projects, and that obtaining aggregate from farther away increases its cost. Demand for aggregate is expected to increase as the State's population continues to grow and infrastructure is maintained, improved, and expanded. The California Geological Survey predicts that the 50-year demand for all aggregate (including sand, crushed stone, and gravel) in the South San Francisco Bay and North San Francisco Bay Regions will be approximately 1,902,000,000 tons.[34] Currently, there is a substantial shortfall in total amount of permitted aggregate reserves to meet this demand; local land-based aggregate reserves contain enough permitted resources to last only through 2023 in the North Bay and through 2023 to 2032 in the South Bay.

[34] Clinkenbeard, *Aggregate Sustainability in California*.

The projections described above are for supply and demand of all aggregates. Of this total aggregate demand, about 25 percent is forecast for use in high strength concrete (Portland Concrete).[35] Lind does not import sand from outside the Bay Area and uses only Bay sands to meet customer requests. Sand mining authorized in this permit provides an important source of local sand for use as an additive in concrete and asphalt, backfill for utility trenches, general fill, and construction of roads, bridges, residential developments, and public and commercial buildings.

As described above, the Water Board has issued a Water Quality Certification (WQC) and Waste Discharge Requirements (WDR). The WQC/WDR requires the applicant to comply with specific wastewater dilution ratios, mining of only non-hazardous materials, and does not allow discharge of pollutants or other materials that would cause a nuisance or adversely affect beneficial uses of the Bay, including increased turbidity and deleterious impacts to wildlife.

Regarding seasonal work windows for this activity, the permittee received biological opinions and an incidental take permit from the Resource Agencies. In their review of the project, the Resource Agencies placed seasonal limitations on mining activities in Suisun Bay, which are addressed under Special Condition II-C(1). Lind was previously permitted to mine up to 250,000 cy of sand from the Middle Ground Island lease area. Lind originally requested 150,000 cy annual mining and a total ten-year volume of 1.5 million cy in the application received by BCDC on February 20, 2013. In the revised application updated on March 4, 2015, Lind further reduced the requested volume on Middle Ground Island Shoals. The authorized project allows the permittee to mine up to 100,000 cy annually, with a ten-year total of 1.0 million cy and also authorizes the permittee to exceed the annual limit and mine up to 120,000 cy when demand is high, as long as the total mined over ten years remains under the 1.0 million cy over ten years. The average of 100,000 cy annually will also be calculated as a rolling average over this ten-year permit period, which further limits the number of “peak years” that can occur contiguously.

The siting and design of the project will result in the minimum amount of mining necessary for the project. The applicant reduced both the annual project volume and the total amount to be dredged over a ten-year period in response to staff and Commission concerns about impacts to both the mining resources themselves and wildlife present in the project area. The authorized project provides the permittee with the flexibility to exceed the annual mining volume limit to address high demand years in the Bay Area Market, as long as the total mined over ten years remains under 1.0 million cubic yards over ten years. Additionally, the permittee does not have capacity at their offloading yards to stock pile sand and material will only mine sand if the market demands such volume. Therefore the applicant is minimizing the amount of mining necessary for the project.

[35] Ibid.

The permitted ten-year volume is the same as the Environmentally Superior Alternative in the State Lands Commission FEIR. The annual "peaks" in the permitted volume will allow Lind to address market fluctuations and regional sand demand. Maintenance of an overall rolling average that is 100,000 cy annually, will constrain the number of peaks over the ten-year period and limit impacts of mining the "full" peak volume over a few consecutive years in a row. In addition, Lind has stated the authorized volume would be mined only if the market demands such volume, therefore Lind has minimized the amount of mining that will occur during any given year.

For all the reasons listed above, the Commission finds that the project is consistent with the Commission's laws and policies related to dredging.

E. **Navigation Safety and Oil Spill Prevention**. The Bay Plan's Navigational Safety and Oil Spill Prevention Policy 2 states that the Commission should ensure that marine facility projects are in compliance with oil spill contingency plan requirements of the CDFW Office of Spill Prevention and Response (OSPR), the U.S. Coast Guard and other appropriate organizations. As owners and/or operators of marine vessels operating in regulated waters of the State and often adjacent to or within federal navigational channels, Lind is required to abide by maritime laws and best safety practices. Specific to their sand mining activities, Provision 10 of the WQC/WDR requires the applicant to maintain and implement a CDFW OSPR-approved plan, if necessary, that demonstrates that adequate measures are in place to prevent and respond to accidental release of hazardous materials. The CDFW ITP requires the permittee follow state and federal laws and regulations in regards to hazardous waste spills and clean up. The ITP also prohibits the storage and handling of hazardous wastes in the project area. Additionally, the USEPA also issued Lind a Vessel General Permit (VGP) that includes BMP's for controlling and containing hazardous materials used during general operations of mining vessels. These permits and their requirements are intended to insure the applicant will operate in accord with the required navigational safety and oil spill contingency plans. The permittee shall provide an Oil Spill Prevention plan in accordance with BCDC policies, CDFW requirements, and the Water Board requirements. Special Condition II-J requires the permittee to maintain all equipment in good condition to prevent leaks of contaminants or hazardous materials into the Bay, maintain current spill preventions and clean up plans, and notify Commission staff in the event of a hazardous material spill or leak of contaminants into Bay waters.

For all the reasons listed above, the Commission finds that the project is consistent with the Commission's laws and policies on Navigation Safety and Oil Spill Prevention.

F. **Public Trust.** The Bay Plan policy on Public Trust states that "[w]hen the Commission takes any action affecting lands subject to the public trust, it should assure that the action is consistent with the public trust needs for the area…." The public trust is a common law doctrine that guarantees the right of the public to use the state's waterways for navigation, commerce, fisheries, boating, recreation, natural habitat protection, and to preserve lands in their natural state for protection of scenic and wildlife habitat values. Public trust uses of public lands are generally limited to water

dependent or water related uses, with some exceptions for ancillary structures necessary for the water dependent uses. Further, because public trust lands are held in trust for all citizens of the state, they must be used to serve statewide, as opposed to purely local, public purposes.[36] The State Lands Commission is responsible for determining if a project proposed on sovereign land is consistent with the public trust. In issuing the lease for this project, the State Lands Commission determined that the project was consistent with public trust.

The State Lands Commission's finding that this project was consistent with the public trust use was challenged by Bay Keeper in 2014. Upon review, the Superior Court of the City and County of San Francisco upheld the State Lands Commission's finding. However, Bay Keeper has appealed this decision to the First District Court of Appeal. The Court of Appeal has not yet heard this appeal.

In completing its independent evaluation the project, the Commission must determine if the project is consistent with the public trust needs, rather than the uses. Public trust needs include the same categories as the uses: navigation; commerce; fisheries; boating; recreation; natural habitat protection; and to preserve lands in their natural state for protection of scenic and wildlife habitat values. Sand mining is a water-oriented use in that sand is mined from the Bay and serves the important public purpose of supplying sand to the construction industry from a local source, reducing greenhouse gas and other emissions, truck traffic, and impacts to Bay Area roadways. Regarding statewide purposes, according to the permittee, sand mined from the Bay is used in public buildings and roadways that serve a statewide purpose.

The project as conditioned does not interfere with the navigation, commerce, boating and fisheries needs of the area. The authorized project includes minimization measures to reduce impacts to habitat and sediment transport. In addition, there are several minimization measures that reduce impacts to fish and wildlife, and their habitat. The mining activity is further restricted in area by equipment limitations, and through the biological opinions, the incidental take permit and Special Condition II–D(1)(a), which requires buffer zones from shorelines and other special habitat features, thereby minimizing harmful effects, and preserving adjacent habitat for wildlife uses. Finally, the funding dedicated to both the benthic and sand transport studies will provide information to further assist the Commission and other Resource Agencies in the future in making resource decisions that impact the public trust needs of the Bay Area.

After balancing the various public trust needs of the area, the Commission finds that the project as conditioned is consistent with the Bay Plan policy on Public Trust.

G. **Review Boards**

1. **Sand Mining Science Panel.** A science panel of distinguished experts in the fields of geology, engineering, oceanography, marine and benthic ecology convened to discuss the currently available science about the transport of sandy sediment

[36] State Lands Commission Public Trust Policy: http://www.slc.ca.gov/About_The_CSLC/Public_Trust/Public_Trust_Doctrine.pdf

throughout the Bay Area to the outer coast and sandy shoal habitats. This panel discussed a series of management questions proposed by Commission staff regarding the current state of sandy sediment resources in the Bay, replenishment of sand in areas of extraction during mining events, habitat and species impacts, whether disturbance from mining has more of an impact on the biological community recovery than naturally occurring disturbances in the system, and potential monitoring that could be used to enhance understanding of sandy sediment resources, the communities that inhabit them, and the potential impacts of mining on the system. While the discussion was not conclusive, it informed this process and the management measures that could be incorporated into a final permit authorization. An abridged transcript can be found at http://www.bcdc.ca.gov/dredging/SandMiningSciPanAbridged.pdf.

H. **California Environmental Quality Act**. On October 19, 2012, the State Lands Commission ("SLC") certified a final environmental impact report (FEIR) for the project and adopted CEQA findings as part of associated project approvals. [Minute Item No. 101].

The SLC also adopted CEQA findings ("findings"), including mitigation measures and project alternatives that address environmental topics pertaining to activities subject to leases issued by the SLC or otherwise subject to the SLC's authority. Those include: biological resources including benthic ecology, hydrology and water quality including SF Bay bathymetry, and air quality. The SLC adopted mitigation measures and project alternatives addressing these topics, implemented through the associated and approved mitigation monitoring program and adoption of the Reduced Project Alternative with Increased Volume Option, and found that, with these mitigation measures and alternatives, the project would avoid or substantially lessen potentially significant effects as identified in the EIR, with the exception of impacts to air quality, climate change, and Delta and longfin smelt. For these impacts the SLC adopted a statement of overriding considerations.

The FEIR was challenged in 2012, and the Superior Court of the City and County of San Francisco upheld the SLC's certification of the FEIR. The Court's decision is currently on appeal, at the First District Court of Appeal. Section 21167.3(b) of CEQA and section 15233 of the CEQA Guidelines require that, in the event of a legal challenge to the adequacy of an EIR for a project for which a permit application is pending before the Commission, the Commission, in its capacity as a responsible agency, consider and act upon any such permit application. In the event that in the future a court invalidates the SLC's FEIR certification, and on the basis thereof directs the Commission to reopen its regulatory review, this permit action would be revisited.

In addition, as discussed above, the Commission has also adopted and incorporated into the proposed Commission permit special conditions that would substantially reduce to a level of insignificance all adverse environmental impacts associated with the project, including impacts related to biological resources including benthic ecology, physical

resources including SF Bay bathymetry, and water resources and quality. For these impacts, the Commission finds pursuant to section 21080.5(d)(2)(A) of CEQA and section 15096(g)(2) of CEQA Guidelines that the proposed project, as conditioned, will avoid or substantially lessen all significant adverse environmental impacts, and that consequently there are no alternatives or mitigation measures within the Commission's powers that would substantially lessen or avoid any significant effect the project would have on the environment. Accordingly, the Commission finds that the proposed project as conditioned is consistent with the requirements of CEQA.

I. **Coastal Zone Management Act.** The Commission further finds, declares, and certifies that the activities authorized herein are consistent with the Commission's Amended Management Program for San Francisco Bay, as approved by the Department of Commerce under the Federal Coastal Zone Management Act of 1972, as amended.

J. **Conclusion**. For all the above reasons, the Commission finds, declares, and certifies that, subject to the Special Conditions stated herein, the project authorized herein is consistent with the McAteer-Petris Act, the *San Francisco Bay Plan*, the Suisun Marsh Preservation Act, the *Suisun Marsh Protection Plan,* the *Solano County Policies and Regulations Governing the Suisun Marsh*, the Commission's Regulations, the California Environmental Quality Act, and the Commission's Amended Management Program for the San Francisco Bay segment of the California coastal zone.

IV. Standard Conditions

A. **Permit Execution**. This permit shall not take effect unless the permittee executes the original of this permit and return it to the Commission within ten days after the date of the issuance of the permit. No work shall be done until the acknowledgment is duly executed and returned to the Commission.

B. **Notice of Completion**. The attached Notice of Completion and Declaration of Compliance form shall be returned to the Commission within 30 days following completion of the work.

C. **Permit Assignment**. The rights, duties, and obligations contained in this permit are assignable. When the permittee transfers any interest in any property either on which the activity is authorized to occur or which is necessary to achieve full compliance of one or more conditions to this permit, the permittee/transferor and the transferees shall execute and submit to the Commission a permit assignment form acceptable to the Executive Director. An assignment shall not be effective until the assignees execute and the Executive Director receives an acknowledgment that the assignees have read and understand the permit and agree to be bound by the terms and conditions of the permit, and the assignees are accepted by the Executive Director as being reasonably capable of complying with the terms and conditions of the permit.

D. **Permit Runs With the Land**. Unless otherwise provided in this permit, the terms and conditions of this permit shall bind all future owners and future possessors of any legal interest in the land and shall run with the land.

E. **Other Government Approvals**. All required permissions from governmental bodies must be obtained before the commencement of work; these bodies include, but are not limited to, the U. S. Army Corps of Engineers, the State Lands Commission, the Regional Water Quality Control Board, and the city or county in which the work is to be performed, whenever any of these may be required. This permit does not relieve the permittee of any obligations imposed by State or Federal law, either statutory or otherwise.

F. **Project must be Consistent with Application**. Work must be performed in the precise manner and at the precise locations indicated in your application, as such may have been modified by the terms of the permit and any plans approved in writing by or on behalf of the Commission.

G. **Life of Authorization**. Unless otherwise provided in this permit, all the terms and conditions of this permit shall remain effective for so long as the permit remains in effect or for so long as any use or construction authorized by this permit exists, whichever is longer.

H. **Commission Jurisdiction**. Any area subject to the jurisdiction of the San Francisco Bay Conservation and Development Commission under either the McAteer-Petris Act or the Suisun Marsh Preservation Act at the time the permit is granted or thereafter shall remain subject to that jurisdiction notwithstanding the placement of any fill or the implementation of any substantial change in use authorized by this permit. Any area not subject to the jurisdiction of the San Francisco Bay Conservation and Development Commission that becomes, as a result of any work or project authorized in this permit, subject to tidal action shall become subject to the Commission's "bay" jurisdiction.

I. **Changes to the Commission's Jurisdiction as a Result of Natural Processes**. This permit reflects the location of the shoreline of San Francisco Bay when the permit was issued. Over time, erosion, avulsion, accretion, subsidence, relative sea level change, and other factors may change the location of the shoreline, which may, in turn, change the extent of the Commission's regulatory jurisdiction. Therefore, the issuance of this permit does not guarantee that the Commission's jurisdiction will not change in the future.

J. **Violation of Permit May Lead to Permit Revocation**. Except as otherwise noted, violation of any of the terms of this permit shall be grounds for revocation. The Commission may revoke any permit for such violation after a public hearing held on reasonable notice to the permittee or their assignees if the permit has been effectively assigned. If the permit is revoked, the Commission may determine, if it deems appropriate, that all or part of any fill or structure placed pursuant to this permit shall be removed by the permittee or their assignees if the permit has been assigned.

K. **Should Permit Conditions Be Found to be Illegal or Unenforceable**. Unless the Commission directs otherwise, this permit shall become null and void if any term, standard condition, or special condition of this permit shall be found illegal or unenforceable through the application of statute, administrative ruling, or court determination. Any uses authorized shall be terminated to the extent that the Commission determines that such uses should be terminated.